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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,973	12/31/2001	Jeong Ho Lee	P21833	5445

7055 7590 12/13/2004

GREENBLUM & BERNSTEIN, P.L.C.  
1950 ROLAND CLARKE PLACE  
RESTON, VA 20191

EXAMINER
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KRISHNAMURTHY, RAMESH

ART UNIT	PAPER NUMBER
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3753

DATE MAILED: 12/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/029,973

Applicant(s)

LEE ET AL.

Examiner

Ramesh Krishnamurthy

Art Unit

3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 September 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 4 - 6, 8 and 9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 4 - 6, 8 and 9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>09/08/04</u> . | 6) <input type="checkbox"/> Other: _____  |

This office action is responsive to communications filed 09/17/2004.

**Claims 1, 4 – 6, 8 and 9 are pending.**

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1, 4 – 6 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 8 recite the limitation “the parts of the check valve overlaps”. It is not clear as to which parts of the check valve overlap rendering the claims confusing and indefinite.

In this office action, this limitation has been interpreted as having any one part of the check valve overlapping at least one another part thereof.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 8 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Esper (US 5,335,862) or JP 11 -287118.

Regarding claim 8, it is noted that in the device of Esper discloses (Figs. 5 – 7 and Figs.12A – 12C and Col. 5, lines 3 - 6) a check valve (72b or 72c or 72d or 72i, 72g or 72h, respectively) that prevents flow in one direction while permits in an opposite

direction, with the parts of the check valve overlapping in the same sense as the parts in the Applicant's invention.

Regarding Claim 8, it is noted that in the device of JP 11-287118, a check valve (4) is disclosed that prevents flow in one direction while permits in an opposite direction, with the parts of the check valve overlapping in the same sense as the parts in the Applicant's invention.

Regarding claim 9, it is noted that the helix shape of the helical plate spring check valve in Esper (72i, 72g or 72h) is a circular helix shape (see Fig. 5). In the document JP 11-287118, check valve (4) does have a circular helix shape (Figs. 1 and 2)

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1, 4 – 6, 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Prior Art admitted to by the applicant (Figs. 1 – 3B & paragraphs (02) – (21) in the specification) in view of Esper (US 5,335,862) or JP 11 -287118, as applied to claims 8 and 9 above.

The prior art admitted to by the applicant (Figs. 1 – 3B & paragraphs (02) – (21) in the specification) discloses a valve plate (13) having an inlet hole (13a) that draws in a low pressure fluid by an open-and-shut operation driven a piston (12) movement, and a discharging hole (13b) that discharges a high pressure fluid through an open-close operation; and

A check valve (14a) coupled to the inlet hole and a check valve (14b) coupled to the discharge hole of the valve plate (13).

The prior art admitted to by the applicant (Figs. 1 – 3B & paragraphs (02) – (21) in the specification) discloses the invention claimed with the exception of disclosing the check valve of having a helical plate spring structure.

Both Esper (US 5,335,862) and JP 11 –287118 discloses a check valve having helical plate spring structure that allows a proper operation of the valve through a construction that provides a positive checked position (i.e. a closed position) and a low-restriction flow in the open position.

The check valve of Esper (US 5,335,862) and that of JP 11 –287118 has many advantages including reduced manufacturing cost by combining the valve and spring

into an integrated structure and also simplifying the assembly of the valve into the housing.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have replaced the inlet plate (14a) or the discharge plate (15) with their respective check valves, with a check valve having a helical plate spring structure for the purpose of obtaining a proper operation of the valve through a construction that provides a positive checked position (i.e. closed position) and a low-restriction flow in the open position along with realizing reduced manufacturing cost by combining the valve and spring into an integrated structure and also simplifying the assembly of the valve into the housing, as recognized by Esper (US 5,335,862) or JP 11 -287118.

Regarding claim 4, it is noted that the structural shape of the check valve is such that the width becomes narrower as distance from the hole increases.

Regarding claim 5, it is noted that in the combination set forth above, the movement of each floor or flexible arm, is caused by the piston movement.

Regarding claim 6, it is noted that the device according to the combination set forth above would also work with the fluid being a refrigerant.

### ***Response to Arguments***

8. Applicant's arguments with respect to claims rejected above have been considered but are moot in view of the new ground(s) of rejection.

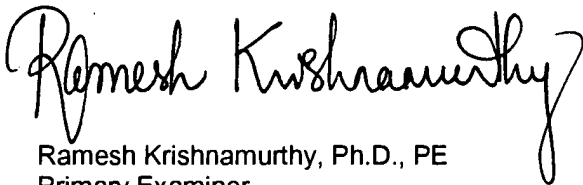
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramesh Krishnamurthy whose telephone number is (571) 272 - 4914. The examiner can normally be reached on Monday - Friday from 10:00 AM to 6:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gene L. Mancene, can be reached on (571) 272 – 4930. The fax phone number for the organization where this application or proceeding is assigned is (703) 872 – 9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 - 0861.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, reading "Ramesh Krishnamurthy". The signature is fluid and cursive, with the first letter of each name being capitalized and prominent.

Ramesh Krishnamurthy, Ph.D., PE  
Primary Examiner  
Art Unit 3753